Topic 15: Drugs

The Definition of a Drug

A **drug** is any substance taken into the body that **modifies or affects chemical reactions in the body**.

- Some drugs are medicinal, used to treat symptoms or causes of disease (e.g., antibiotics).
- The **liver** is the primary site for drug metabolism in the body.

Antibiotics and Bacterial Infections

What are Antibiotics?

Antibiotics are **chemical substances** (often made by certain fungi or bacteria) that are used for the treatment of **bacterial infections**.

- **Mechanism:** They work by **disrupting the structure or function** of bacterial cells (e.g., preventing them from forming a cell wall) or by **preventing them from reproducing**.
- **Specificity:** Antibiotics **kill bacteria** but **do not affect viruses**. This is because antibiotics target processes and structures(e.g. cell wall, ribosomes) specific to bacterial cells, which viruses lack.

Antibiotic Resistance

The effectiveness of antibiotics is reduced because some bacteria are **resistant to antibiotics**.

- **Causes of Resistance:** Resistance is increasing due to:
    - **Overuse:** Being prescribed when not really necessary (e.g., for viral infections).
    - **Incomplete Courses:** Patients failing to complete the fully prescribed course, allowing the most resistant bacteria to survive and multiply.

Limiting the Development of Resistant Bacteria

It is essential to **explain how using antibiotics only when essential can limit the development of resistant bacteria** such as MRSA.

- **Essential Use Only:** Antibiotics should only be taken when **absolutely essential** and prescribed for a confirmed bacterial infection. This reduces the selective pressure on bacteria, slowing the rate at which resistance develops.
- **Complete the Course:** Always **ensure that the entire course is completed**. This ensures all bacteria, including the slightly more resistant ones, are killed, preventing them from multiplying and passing on their resistance genes.
- **Good Hygiene:** Practicing good hygiene (e.g., handwashing) reduces the spread of infection, which in turn reduces the overall need for antibiotics.